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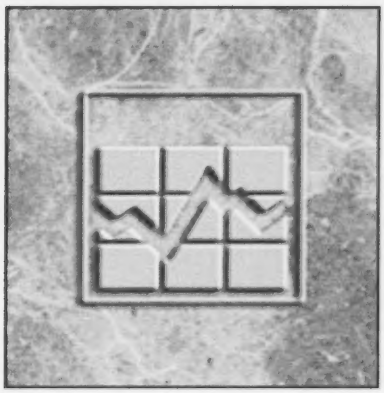
Employment instability among younger workers



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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Employment instability among younger workers

by Sébastien LaRochelle-Côté

1. Introduction

Young people typically experience difficulty finding their way into career employment in the aftermath of recessions. The 2008 economic downturn is no exception, as young adults bore a disproportionate share of job losses (Gilmore and LaRochelle-Côté, 2009; Fong, 2012), and the demand for youth labour did not pick up after the recovery.

The protracted period of weak demand that followed the downturn raises the possibility of a growing pool of youth who may have trouble finding stable employment that matches their qualifications and allows them to make the transition into productive adulthood. The issue is especially important for recent labour market entrants, since early career unemployment may have long-lasting effects on labour market outcomes (Kahn, 2010a; Oreopoulos, von Wachter & Heisz, 2006). Part-time or temporary jobs may be a stepping stone toward a better job, and they are sometimes the only alternative for youth, given the lack of opportunities in the labour market—particularly when they have little experience or qualifications (Kapsalis & Tourigny, 2004).

In view of the above, Human Resources and Skills Development Canada has worked with Statistics Canada to develop a statistical definition to quantify the number of young adults who may be experiencing difficulty finding stable employment, and to identify the factors most likely to be associated with such a situation.

The paper begins by explaining the definition that was used to generate an estimate of the number of youth experiencing employment instability over a two-year period. It then provides information on the number and characteristics of youth in this state during the period from 2007 to 2009, including a model that controls for many characteristics simultaneously. The report concludes by examining how employment instability relates to another concept that identifies at-risk youth—those who are not in employment, education or training (commonly referred to as the NEET).

2. Defining employment instability

Employment instability requires the observation of labour-market activity over a period of time. If, as is the case for many young people, they find and retain a full-time, permanent position over a period of time, they are considered "integrated" into the labour market. If, on the other hand, young working individuals are in a less stable situation after a period of time, they are classified as "experiencing instability." Longitudinal data is thus required to define the population of unstable young workers, which is why the Survey of Labour and Income Dynamics (SLID) was used as the primary source of information for this study (see Appendix A: Data sources and definitions).

The challenge is to define what constitutes employment instability. Since labour market instability is not a standard concept, any definition should be based on an analysis of several alternatives.

The Organisation for Economic Co-operation and Development (OECD) defines "poorly integrated new entrants" as a percentage of non-student working youth (age 15 to 29), who were in a temporary job at the beginning of a two-year study period, and were either in a temporary job, unemployed, or inactive two years later (OECD, 2010). Such a definition, however, may be too restrictive in two ways. First, people transitioning into unstable employment situations may come from other groups of workers, not just those who were working on a temporary basis at the onset of the period. Second, the OECD does not qualify part-time work as potentially unstable, while other bodies—such as the International Labour Organization (ILO)—qualify young workers in either temporary or in part-time jobs as potentially vulnerable, on the grounds that part-time employment grew faster among youth during the recent economic downturn, particularly in Europe (ILO, 2012).

In this paper, the population "at risk" of instability is broadened to include all non-student workers, age 16 to 29, in the first year of a three-year period (e.g., 2007 to 2009);—that is, those who had a job at any point during the first year of observation, and did not go to any school or learning institution in that year. To further refine the "at-risk" population of workers age 16 to 29, two sub-groups of this population are also studied: those who had been working the full year (either on a full-time or a part-time basis), and those who had been working full year and full time in the first year of observation. It is important to consider alternative populations with varying degrees of labour market participation because the determinants of employment instability may differ across groups.

Of these 2007 starting populations, the number of workers experiencing employment instability are classified as those who, two years later (in 2009), either (1) had a temporary job; (2) had a permanent job, but on a part-time basis; or (3) had lost their initial job, and did not work all year. A rate of employment instability can therefore be calculated as the proportion of the initial working population, who were either working in a temporary job as their main job, working part time in their main job, or did not have a job two years later.

Of course, these categories may not always have adverse consequences. People may work part time because they have family or personal responsibilities, because of a disability or an illness, or simply because they do not want to work full time.[1] Temporary workers may include seasonal workers, who are not working permanently because of the nature of the industry in which they work. Conversely, some individuals may be full time and permanent, but may not be integrated because of a qualification mismatch (e.g., an engineer driving a taxi). Instability should, therefore, not be interpreted as definitive measure of labour market difficulties, but rather as one of a range of indicators that track the transition of young people into adulthood.

3. Employment instability, 2007 to 2009

In 2009, approximately 5.2 million individuals were aged 18 to 31 (thus aged 16 to 29 in 2007). This population of young people can be classified on the basis of their activities in 2007. Of the 5.2 million in 2009,

- 3.1 million (59% of the overall population) were students at some point in 2007 (on either a part-time or full-time basis) and were excluded from the calculations;
- 0.2 million (4%) were not employed, in education, or training (NEET) in all of 2007 and were also excluded from the base calculation;
- 1.9 million (37%) were non-students and worked at least once in 2007. These workers represent the "at-risk" population upon which the rate of employment instability can be calculated.[2]

About 23% of youth working at some point in 2007 (451,000 individuals) experienced instability in 2009. Another 75% of youth working in 2007 (1.5 million), were working in a full-time, permanent job in 2009, while just 2% went back to school (Chart 1-A).[3] Chart 1-B further describes those experiencing instability:

- About 56%, or 251,000 individuals, were employed in temporary jobs (either part time or full time) in their main job in 2009;
- Another 26%, or 115,000 individuals, were working in a permanent job, but in a part-time capacity in 2009. Of these, 69,000 individuals (about 15% of the total experiencing instability) were working part time on a voluntary basis, but 46,000 individuals (about 10%) worked part time involuntarily;
- 19%, or 85,000 individuals, were unemployed, or out of the labour force, and did not go to school throughout 2009 (also called "year-round" NEETs).

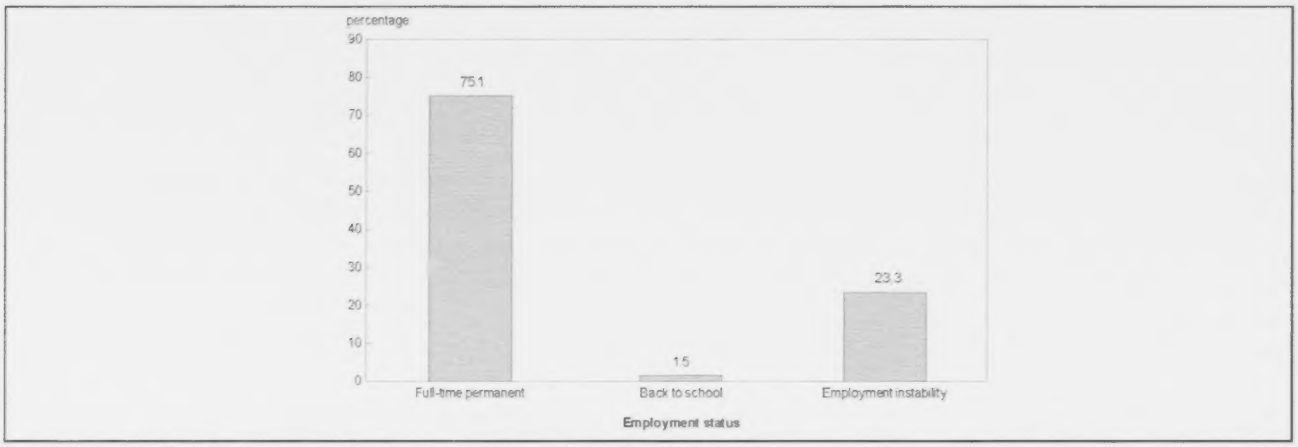
Recall that the results above have been calculated as a proportion of individuals, who were non-students and who participated in the labour market in 2007. Thus, the at-risk population comprises the entire population of non-student youth who were part of the workforce at some point in 2007, including those who worked only part of the year. Although meant to be as inclusive as possible, different results would be obtained if the sample was restricted to those who were most actively involved in the labour market at the beginning of the period. As an alternative, two other population groups were defined: those who were employed for the full year in 2007, and those who were employed on a full-time and full-year basis in 2007.

1 Restricting the population of part-time workers to 'involuntary' part-time workers was judged unsatisfactory, as a significant number of part-time workers answered "other reasons" and "nature of the job was part-time" to explain why they worked part time and thus are not included in the official definition of involuntary part-time workers. Furthermore, the definition of 'involuntary part-time' has changed in the SLID over time, and was not collected prior to 2002.

2. Excluded from the study population of youth were the self-employed, and those for whom information on job status was not available. These observations were excluded, because no judgment could be made on the employment stability of this group of workers. At this age, however, the self-employed represent a tiny portion of the overall sample (representing 268,000 individuals). The official population estimate for the number of youth, age 18 to 31 in 2009, (as of July 1) was 5.6 million, compared with our estimate of 5.5 million—that is, 5.23 million people plus 0.27 million people who were self-employed or for whom information was missing.

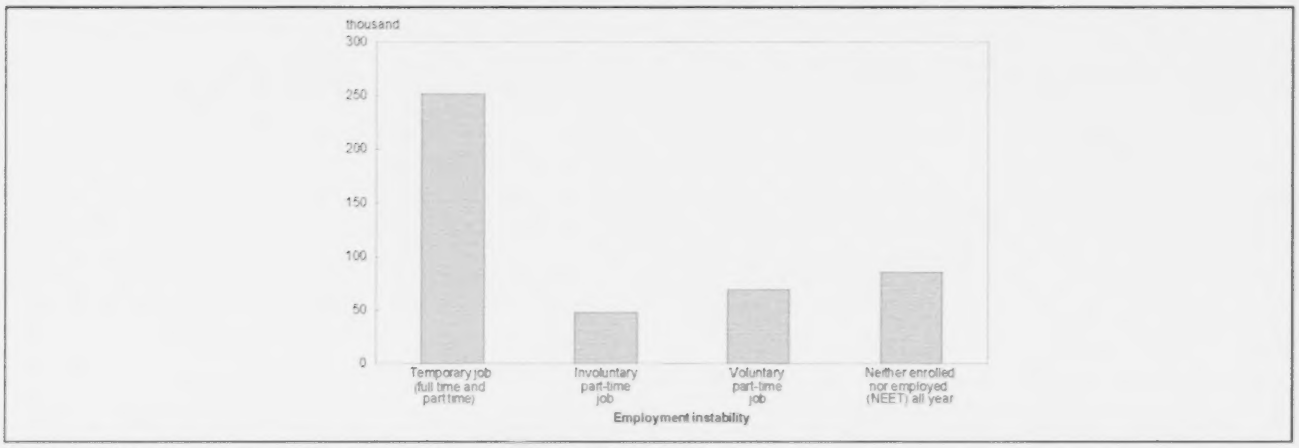
3. Although the number of students is small, recall that the at-risk population included only non-students who had a job in 2007, most of whom would have already completed their studies.

Chart 1-A Status in 2009 of non-student working youth in 2007



Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

Chart 1-B Reason for experiencing instability in 2009 among non-student working youth



Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

The estimated number of full-year workers (non-students) was 1.3 million—about two-thirds of the 1.9 million in the primary, at-risk population. Of this 1.3 million, about 213,000 individuals (or 17%) experienced instability in 2009, compared with 23% for the entire population of workers. Although the rate of employment instability was lower among those who were employed full year in 2007, they made up almost half (47%) of those who were experiencing instability in 2009, which suggests that instability was not limited to those who did not fully participate in the labour market in 2007. Among the 213,000 individuals experiencing instability, about 122,000 had a temporary job, 65,000 were working part time, and 27,000 were not employed or attending school in 2009 (Table 1). Hence, compared with the whole population of workers, those who were full-year workers in 2007 were slightly less likely to be NEET, and slightly more likely to be working part time in 2009.

Restricting the sample to those working full year and full time in their main job reduces the population by another 100,000. Of the 1.2 million who were working on a full-year and full-time basis in 2007, 13% (about 147,000 individuals) were experiencing instability in 2009. Of these, 102,000 had a temporary job, 23,000 were working part time (including 6,000 involuntarily), and 22,000 were not employed or attending school in all of 2009. Such results suggest that the more active young people were in the labour market in 2007, the less likely they were to experience instability in 2009—and if they did experience it, it was mostly because they were employed in a temporary job.

Table 1 Distribution of 2007 young workers age 16 to 29 experiencing employment instability in 2009

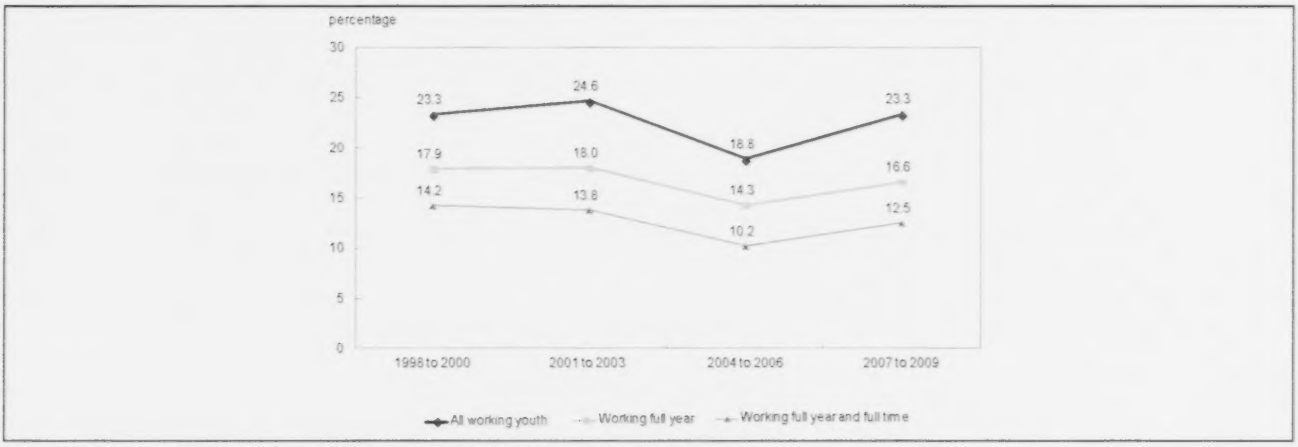
	percentage	thousand
All workers in 2007		
Temporary job, full-time or part-time	56	251
Permanent job, part-time voluntarily	15	69
Permanent job, part-time involuntarily	10	46
Neither enrolled nor employed (NEET) all year	19	85
Total experiencing employment instability	100	451
Full-year workers in 2007		
Temporary job, full-time or part-time	57	122
Permanent job, part-time voluntarily	21	45
Permanent job, part-time involuntarily	9	20
Neither enrolled nor employed (NEET) all year	12	27
Total experiencing employment instability	100	213
Full-year and full-time workers in 2007		
Temporary job, full-time or part-time	69	102
Permanent job, part-time voluntarily	12	17
Permanent job, part-time involuntarily	4	6
Neither enrolled nor employed (NEET) all year	15	22
Total experiencing employment instability	100	147

Note: Numbers do not always add up due to rounding.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

4. Trends in employment instability

Chart 2 presents the rates of employment instability for four periods: 1998 to 2000, 2001 to 2003, 2004 to 2006, and 2007 to 2009. For the working population as a whole (excluding students), instability rates were between 19% and 25% and remained relatively stable over time, while the Canadian economy was characterized by robust growth during the first three periods and a downturn in the fourth. Nevertheless, the relative stability of the rates is consistent with a recent analysis of job quality among young workers, which suggests that – although the recent recession had a disproportionate impact on younger workers in terms of job losses – most indicators of job quality for young workers were relatively stable (Luong, forthcoming).

Chart 2 Trends in employment instability have remained similar over time[1]



1. For each line, the numbers were not statistically significant from one period to the next.
Note: Proportion of non-student youth experiencing employment instability 2 years later.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 1998 to 2009.

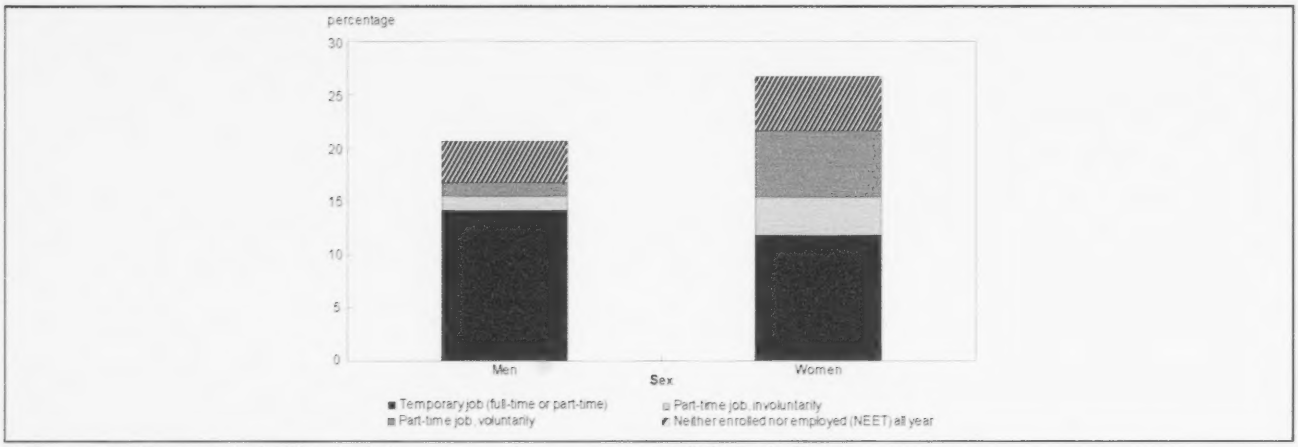
Although the rates were lower, similar trends were observed when restricting the sample to those who were employed all year, and to those who were working full year and full time at the beginning of the study period. Again, the most recent rates are not unusually high by recent standards.

5. Employment instability across key socioeconomic characteristics

This section examines employment instability among all non-student workers in 2007 across several socioeconomic characteristics. Three characteristics are of particular interest: gender, educational attainment, and age.

About 27% (239,000) of women experienced instability in 2009, compared with 21% (212,000) of men (Chart 3). The difference in the overall instability rates between men and women was not statistically significant. More than one-third (88,000) of women experiencing employment instability were in part-time jobs, while 23% were in voluntary part-time jobs. Men (two-thirds/146,000) were more likely than women to be in temporary jobs.

Chart 3 Young workers in 2007 experiencing instability in 2009, by sex

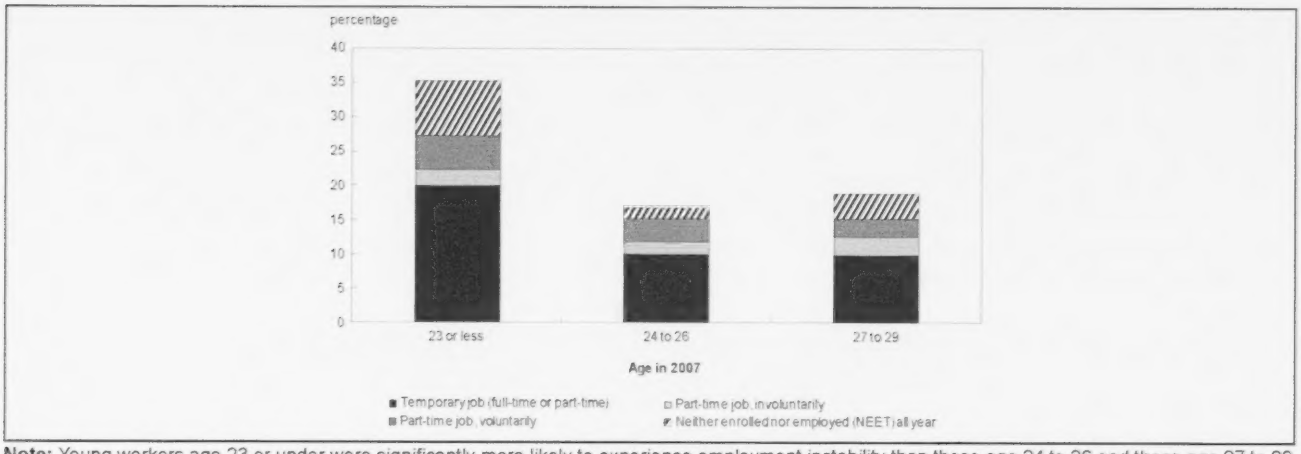


1. The overall difference in instability rates between men and women was not statistically significant.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 1998 to 2009.

As might be expected, younger individuals were more likely to experience employment instability than older individuals (Chart 4). Among those age 23 or less, the rate of instability was at least 35%, while it was under 20% among those age 24 and older. Hence, those age 23 or less represented about one-third of the overall sample of workers, but nearly 50% (216,000 individuals) of the employment instability group. About 104,000 of the 24- to 26-year-olds and 131,000 of the 27- to 29-year-olds experienced employment instability.[4] Both the NEET population and the temporary workers contributed to the higher rates seen among those age 23 or less.

4. The incidence of employment instability was significantly higher among those aged 20 and younger, mainly because of a larger portion of year-round NEET among the youngest workers. However, since they represented just a fraction of the sample of young workers, they accounted for a small minority of the poorly integrated.

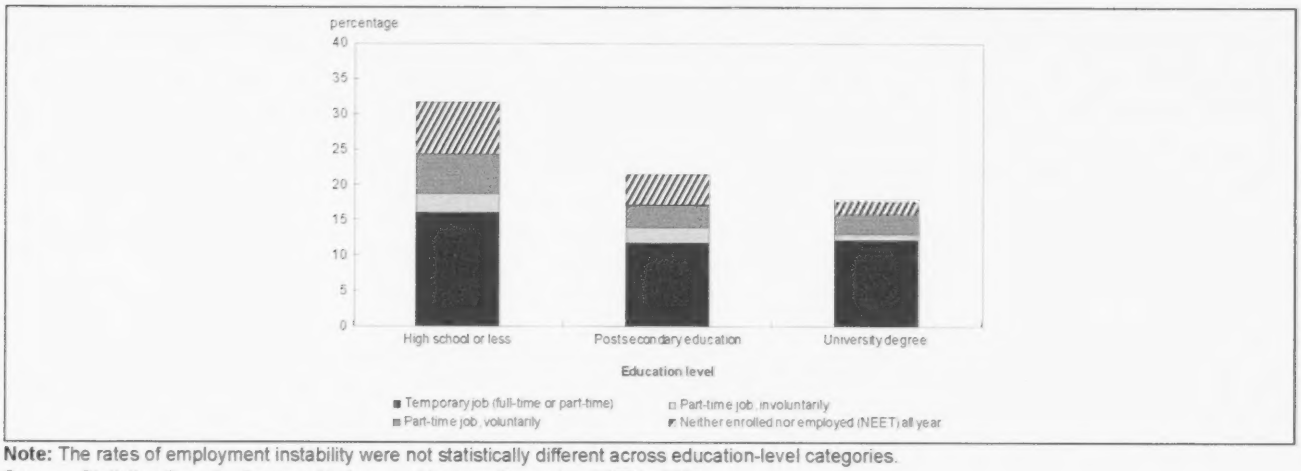
Chart 4 Young workers in 2007 experiencing employment instability in 2009, by age



Note: Young workers age 23 or under were significantly more likely to experience employment instability than those age 24 to 26 and those age 27 to 29.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

Although the rate appeared higher among those who had at most a high school degree, at 32%, it was not statistically different from those who had a postsecondary diploma (that is, those with at least a postsecondary degree but without a bachelor's degree) and from those with a university degree, who had rates of about 20% (Chart 5). In terms of numbers, however, those with postsecondary diplomas below a bachelor's degree made up the largest group of people experiencing employment instability (227,000 individuals) because young workers are typically more likely to belong to the postsecondary education category.[5]

Chart 5 Young workers in 2007 experiencing employment instability in 2009, by education level



Note: The rates of employment instability were not statistically different across education-level categories.
Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

5. However, individuals who have a university degree are more likely to be concentrated among the 'oldest' of our sample of young workers. Hence, the lower degree of employment instability among university graduates could simply be an "age effect"— indicating the need for a regression analysis to control for all possible effects that may be associated with employment instability.

6. Factors most likely to be associated with employment instability

The relationships found above may differ when other factors are taken into account. For instance, age and education were closely related in our sample because the youngest workers in the sample were less likely to have completed a university degree. To simultaneously account for many factors, a multivariate model can be developed to estimate the effect of each factor on employment instability. Marginal effects—obtained through a probit model—estimate the extent to which a group is more or less likely to experience employment instability compared with a reference group, controlling for other factors. These factors include not only the personal factors noted above, but also the job characteristics of working youth since they, too, could be associated with instability. In this model, the dependent variable takes the value of "1" if a worker is experiencing instability two years later (either by working in a temporary job, by working part time, or by leaving the labour market altogether), and "0" otherwise.

Two sets of results are presented in this section. In the first model, only personal characteristics are included: age, education, years of experience, the presence of children, and immigration status.[6] The second model adds job characteristics, as some occupations, industries and firms may be associated with higher (or lower) degrees of employment instability. Results for all working youth, and for those who were more active on the labour market, at the beginning of the period (individuals working full year and working full time and full year), are presented. To maximize the sample size, data from the four most recent six-year panels of SLID were pooled, resulting in a sample of about 5,000 youth, age 16 to 29, who were working at the beginning of the study period.[7]

Because a significant portion of young mothers work on reduced schedules to meet the needs of the family (LaRochelle-Côté and Dionne, 2009), gender variables are interacted with the presence of children in the model. Hence, the first set of variables must be interpreted as the extent to which working men with children, men without children, and working women without children differ from working women with children. Results indicate that men and women without children were all less likely to experience employment instability—although the relationship became weaker for women without children when the sample was restricted to those who previously worked on a full-year and full-time basis (Table 2).

The second set of variables relates to the age and education of survey respondents. Younger workers, aged 16 to 21, were more likely than their older counterparts to experience instability. Educational attainment was not significantly associated with employment instability when other characteristics were taken into account (including the more restrictive model with personal characteristics only), thereby suggesting that the education effect found earlier was, in fact, related to age differences between the most educated and the least educated (recall that the differences discussed in Chart 5 were statistically insignificant).

On the other hand, years of experience were significantly related to instability. Workers who had at least six years of experience (defined as the number of years in which the respondent worked at least six months) were 7 percentage points less likely to be in the employment instability group than those who had two years of experience or less. And although the negative relationship diminished among those who had a stronger degree of labour market attachment, it was still significant for those with at least six years of experience, thereby suggesting that it is experience, and not education, that offers the strongest negative association with higher levels of employment instability.[8,9]

6. Regional and year dummies were also added to all models, but rarely provided significant results.
7. The data were extracted from each six-year panel (and not from the concatenated three-year panels) to ensure that observations were made of different individuals in the overall sample.
8. Although the two are not perfectly correlated, experience can be associated with age, especially among younger workers. When age variables were excluded from the regression, the marginal probability of those with at least six years of experience was about 11 percentage points lower than the reference group, as opposed to 7 percentage points when age variables were included in the model.
9. An alternative model interacted education with experience. Using the least experienced workers with the least education (high school or less) as a reference group, the most experienced in all three educational groups were less likely to experience instability. However, the experience effect among postsecondary graduates before a bachelor's degree was significant only when age variables were removed from the model.

Table 2 Marginal effects from an employment-instability probit model, personal characteristics

	Workers age 16 to 29		
	All workers	Workers, employed full year	Workers, employed full year and full time
	marginal effect		
Family status and gender			
Men without children	-0.19*	-0.17*	-0.10*
Men with children	-0.16*	-0.12*	-0.06*
Women without children	-0.11*	-0.07*	-0.02
Women with children	ref.	ref.	ref.
Age			
16 to 21	0.14*	0.14*	0.15*
22 to 24	0.04	0.04	0.05
25 to 27	0.00	0.01	0.03
28 to 29	ref.	ref.	ref.
Educational attainment			
High school or less	0.05	0.01	0.00
Postsecondary education	0.02	0.00	0.00
University degree	ref.	ref.	ref.
Years of experience			
At least 6 years	-0.07*	-0.06*	-0.04*
3 to 5 years	-0.02	-0.02	0.00
0 to 2 years	ref.	ref.	ref.
Unknown	0.08*	0.07*	0.02
Immigration status			
Immigrant	-0.01	-0.01	-0.01
Canadian-born	ref.	ref.	ref.

* significantly different from the reference category (ref.) at the 5% level. Standard errors were obtained with bootstrap weights. Similar results were obtained when voluntary part-timers were excluded from the sample.

Note: The models also include year and regional dummies.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 1998 to 2009.

Other relationships were found when job characteristics were added to the model (Table 3).[10] People initially working in smaller firms (with less than 20 employees), for example, were more likely to experience instability than those in larger firms. However, the relationship weakened when the sample was restricted to those working full year and full time.

Some occupations were also associated with a reduced probability of employment instability. Workers in management occupations; in business, finance and administrative occupations; and in natural science occupations were less likely to experience instability, compared with workers in sales and service. Workers in management and natural science occupations, in particular, had employment instability rates that were from 6 to 14 percentage points lower than those working in sales and services, depending on the initial degree of labour market participation. Fewer significant relationships were found with respect to industrial differences, as all associations were not significant when the sample was reduced to individuals working full year and full time.[11]

10. The vast majority of the associations found above in Table 2 are still significant and of the same magnitude, which is why they are not shown in Table 3. Also, some of the variables that relate to job characteristics may be endogenously related to various forms of unstable employment, such as seasonal or temporary work.
11. All results described in this section held when the sample was restricted to those aged 18 to 29 in the model.

Table 3 Marginal effects from an employment-instability probit model , job characteristics

	Workers age 16 to 29		
	All workers	Employed full year	Employed full year and full time
	marginal effect		
Firm size			
Less than 20 employees	0.07*	0.05*	0.04
20 to 99	0.05	0.02	0.02
100 to 499	-0.01	-0.02	0.00
At least 500	ref.	ref.	ref.
Size unknown	0.03	-0.05	-0.04
Occupation			
Management	-0.14*	-0.11*	-0.08*
Business, finance and administration	-0.09*	-0.06*	-0.03
Natural sciences	-0.14*	-0.10*	-0.06*
Health	-0.07*	-0.03	0.00
Social science, education, government service and religion	-0.06	-0.05	-0.02
Art, culture, recreation and sport	0.04	0.02	0.01
Sales and service	ref.	ref.	ref.
Trades, transport, equipment operators	-0.04	-0.04	-0.01
Unique to primary and processing	-0.01	-0.05	-0.02
Occupation unknown	-0.09	-0.05	-0.07
Industry			
Manufacturing	-0.09*	-0.06*	-0.04
Other goods producing	0.02	0.02	0.02
Trades and Transportation	-0.06*	-0.04	-0.03
Professional services	-0.03	-0.02	-0.01
All other services	-0.03	0.00	0.00
Education, health and public administration	ref.	ref.	ref.
Industry unknown	-0.05	-0.01	0.00

* significantly different from the reference category (ref.) at the 5% level. Standard errors were obtained with bootstrap weights. Similar results were obtained when voluntary part-timers were excluded from the sample.

Note: The models also include year and regional dummies and all personal characteristics dummies shown in Table 2.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 1998 to 2009.

7. Interaction with those not in employment, education or training

One final question of interest is the extent to which the population experiencing employment instability overlaps with the population of youth who are not in training, education or employment (the "year-round" NEET). This is important, as the NEET population is another potentially vulnerable segment of the youth population (Marshall, 2012). In contrast to earlier studies, the NEET are defined here as neither employed, in education or training **over the entire year** and must therefore be understood as "year-round" NEETs. Hence, the estimates obtained for the NEET population with SLID will substantially differ from the estimates that are obtained from the Labour Force Survey, which are based on the survey reference week, as in Marshall (2012). Table 4 shows how the low integrated population interacted with the NEET population in 2007 and in 2009.

In 2009, approximately 273,000 individuals were NEET on a year-round basis (85,000 + 188,000), representing 5% of the 5.2 million youth.[12] About 42% of this group (or 114,000) had also been NEET in 2007, indicating that the NEET state was persistent or recurrent for about 1 in 50 youth.

12. This compares with approximately 904,000 NEETs age 15 to 29 during the survey reference week reported in Marshall (2012). It is normal, however, to find a much smaller number of year-round NEETs because long periods without employment or education can have consequences on people's ability to find stable and quality jobs in the future, which is why, generally, most people do not remain NEET for long periods.

Table 4 Transition matrix for youth population age 16 to 29 in 2007

	Status in 2007			
	Workers, non-students	Students[1]	Year-round NEET	Total
Category in 2009	thousand			
Experiencing instability as a temporary or part-time worker in 2009	366	...	...	**366**
Experiencing instability as a year-round NEET in 2009	85	...	...	**85**
Outside the non-student working population in 2007, year-round NEET in 2009	...	74	114	**188**
Had a full-time permanent job or were students in 2009	1,479	3,018	95	**4,592**
Total	**1,930**	**3,092**	**209**	**5,231**

1. Student in a recognized institution at least once in 2007. Some individuals in this category might have worked in the same year they were students.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 2007 to 2009.

Those who were in a situation of employment instability and were NEET in 2009 numbered 85,000 individuals. As a result, those who experienced employment instability in 2009 but were not NEET amounted to 366,000 individuals. Conversely, the number of "NEET only," (NEET in 2009, but not included in our population of workers experiencing instability in 2009) amounted to 188,000 individuals. In sum, the number of youth in these groups consisted of 639,000 individuals, shown in bold in the last column in Table 4:

- 85,000 who were experiencing employment instability as year-round NEETs
- 188,000 who were year-round NEET "only" as they did not work in 2007
- 366,000 who were experiencing employment instability because of a temporary job or a part-time job.

As a percentage of the total population age 16 to 29 in 2007, those who were either NEET or were experiencing instability amounted to 12%. Of these, 3% were year-round NEET, who did not participate in the labour market in 2007, and 9% worked in 2007, but experienced instability in 2009.

8. Conclusion

This report sheds light on a little-studied sub-population of youth—those experiencing instability in the labour market. In this paper, employment instability is defined as the share of working, non-students, age 16 to 29 who, two years later, were either working in a temporary or part-time job or were not employed. Although different from a recent definition developed by the OECD, this definition may be better suited for the Canadian context.

According to the above definition, the report shows that about 23% of non-student workers (451,000) age 16 to 29 in 2007 experienced some form of employment instability in 2009. Of these, 56% were in temporary jobs (part time or full time), 26% were working in permanent part-time jobs, and 19% did not work at all in 2009.

Some personal and job characteristics were associated with instability. Women with children had a higher probability of experiencing instability, mostly because they were more likely to be working part time. Conversely, some specific occupations—such as management; business, finance and administration; and natural sciences—decreased the probability. Education mattered little to the degree of employment instability experienced by the youth population. Age and experience were related to instability to some extent, as those age 21 or less were more likely to experience employment instability, and those with at least six years of labour market experience were less likely to experience instability.

As a proportion of all youth age 16 to 29 in 2007, employment instability, as defined in this paper, would affect 9% of this population. Adding those who were not in employment, education, or training throughout 2009, would bring the proportion of those in potentially at-risk groups to 12% of the youth population, or 639,000 individuals. In other words, 1 in 8 of Canada's non-student youth is only loosely attached to the labour market. Further research would be required to understand the potential impact of employment instability on other social outcomes, including low income, marital status, and lifestyle choices.

Appendix A: Data sources and definitions

The data used in this report come from the Survey of Labour and Income Dynamics (SLID). SLID was used because poorly integrated new entrants are defined as people who have trouble integrating into the labour market over a long period of time. SLID follows individuals for up to six years, and provides information about the student and working status of survey respondents. Furthermore, SLID most closely resembles the European sources of data that were used to generate similar statistics for the Organisation for Economic Co operation and Development (OECD).

To a certain extent, the concept of employment instability, used in this paper, is partly inspired by the concept of "poorly integrated new entrants" developed by the OECD. Poor integration is calculated by examining the working situation of individuals over two years, but is primarily restricted to those who were working in temporary jobs at the beginning of the period. In terms of age, the OECD defines youth as those who were between the ages of 15 and 29 at the start of the reference period. Correspondingly, the statistics on employment instability are based on all youth aged 18 to 31 at the end of the reference period (2009) and aged 16 to 29 at the beginning of the reference period (2007).[13]

In this study, employment instability numbers are calculated from a base of non-student workers (meaning that they participated to the labour market at least once over the course of the year), and can be defined as those who were either not employed, working in a temporary job, or working as permanent workers, but in a part-time capacity, at the end of the reference period. Employment instability is therefore defined as follows:

Table 5 Defining employment instability

		Experiencing employment instability (age 18 to 31)
Working population (age 16 to 29) Non-students who held at least one job during the year	1)	Unemployed, or out of the labour force (also called not employed, in education, or training – the "year-round" NEET)
	2)	Working in a temporary job in their main job (defined as a term or contract job, a seasonal job, or a casual job), either on a full-time or a part-time basis
	3)	Working on a part-time basis in their main job (defined as less than 30 hours a week), although job was reported as permanent
		Integrated into the labour market (age 18 to 31)
	4)	Working as a permanent, full-time worker in their main job
		Back to school (age 18 to 31)
	5)	Attended school in a recognized institution but did not participate in the labour market at all over the course of the year

The instability rate is, therefore, the number of people considered to be experiencing employment instability on the right column, divided by the number of people on the left column. This definition is not directly comparable with the OECD's, as both the base population **and** the population experiencing instability have been defined so as to include as many people as possible. The OECD, by contrast, defines a rate of "poorly integrated new entrants" based on a population of young workers in temporary jobs, and identifying those who were not employed, or still working in a temporary job, two years later. For results based on the OECD definition, see Appendix B: *Comparison with the Organisation for Economic Co-operation and Development.*

Since information for some variables was missing for some respondents in the sample, reweighting was required to provide population-level estimates. Reweighting is a process whereby individuals with missing information are excluded from the sample, but the weights of the remaining sample are adjusted proportionately upwards to compensate, by multiplying the weights of these observations by an adjustment factor. These adjustment factors vary, according to characteristics related to the probability of respondents answering the survey. The characteristics that were used in determining the adjustment factor were the survey respondents' age, gender and region of residence.

Reweighting was required at two different stages of the data extraction. The first reweighting was necessary to account for the fact that information about the labour market or student activity of survey respondents was missing, in 2009, for 2,241 of the 5,740 individuals in the original sample (amounting to approximately 21% of the original sample in weighted terms). The second was to account for the fact that information on labour market or student activity, in 2007, was missing for 414 observations (amounting, in weighted terms, to about 13% of the sample of 3,499 people for whom the 2009 information was available).[14]

13. SLID does not collect labour information among respondents aged 15 and younger.
14. Recall that 152 observations were also deleted (representing another 5% of the sample) because they were either self-employed in 2007 or 2009, or because the information on job status was not known in one of the two years (see footnote 2). Therefore, the final results for the period from 2007 to 2009 were based on 2,933 individuals.

Appendix B: Comparisons with the Organisation for Economic Co operation and Development

The Organisation for Economic Co-operation and Development (OECD) recently published its own international comparisons of the percentage of young individuals, age 15 to 29, who are "poorly integrated new entrants" (OECD, 2010). The OECD defines the poorly integrated as the number of people who were working in a temporary job at the beginning of the reference period, and were still in temporary employment, unemployed or inactive at the end of the reference period. It is, therefore, a more restrictive definition than the one used in this paper, which examines the portion of those who were in temporary employment, or unemployed, or inactive only at the end of the reference period, regardless of their job status at the beginning.

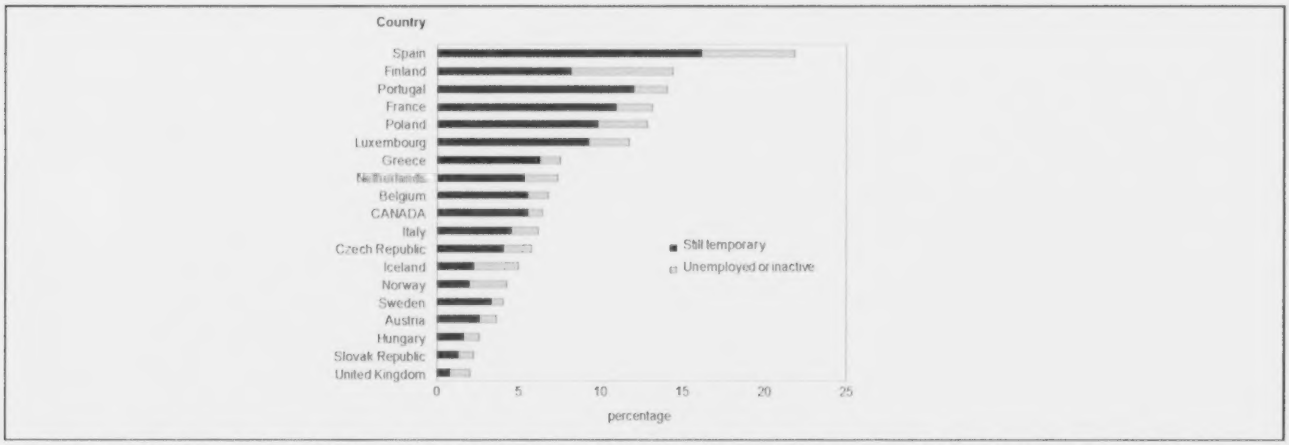
The OECD's emphasis on temporary work is a definition that may be better suited to European labour markets. In Europe, access to a permanent job often means better access to a number of social benefits with regard to retirement security, health and job protection. By contrast, those who are employed on a temporary basis do not enjoy such benefits, and may have to move from job to job to gather labour-market experience, with the hope of eventually getting a permanent position (Kahn, 2010b). This situation results in a significant quality gap between temporary and permanent jobs in Europe, thereby giving value to a definition based on the temporary nature of jobs held by the poorly integrated. It is with this in mind that readers should interpret the international comparisons presented in this appendix.

In 2010, the OECD released information on the poorly integrated youth for 18 European countries (like Canada, data for the United States were missing from these statistics). The years were 2005 to 2007, so Survey of Labour and Income Dynamics (SLID) data for the same period can be used for comparison. While the OECD figures are based on individuals age 15 to 29 at the beginning of the reference period, Canadian figures will be based on individuals age 16 to 29, because SLID does not collect labour force information before that age.

During the period from 2005 to 2007, the number of non-student working youth was 1.9 million (as in 2008 to 2009). Of these, 125,000 (6%) were "poorly integrated new entrants," as defined by the OECD. Although lower than the European average of 7%, this would situate Canada near the middle of a representative sample of OECD countries (Chart 6), but far away from the countries with the highest rates.

Of the 125,000 individuals who were poorly integrated, 86% were still working on a temporary basis two years after being identified as working on a temporary basis at the beginning of the survey reference period. The rest were either inactive or looking for a job in 2007, the end of the reference period.

Chart 6 Poorly integrated new entrants in 2007 as a percentage of temporary workers age 15 to 29 in 2005



Sources: European data: OECD, 2010, Figure 3.9. Canadian data: Statistics Canada, Survey of Labour and Income Dynamics, 2005 to 2007.

Appendix C: Alternative modelling strategy

The results above showed that women the presence of children had a larger impact on women. As a result, the factors associated with employment instability may be different for men and women. In this appendix, separate models for men and women are presented (Table 6).

Some of the associations found in the above report still held for both men and women. Young individuals age 16 to 21 were more likely to experience instability, although the relationship was not always significant. Men and women working in management and natural sciences occupations were also less likely to experience instability, albeit with varying degrees of significance.

Some characteristics, however, appeared to matter more for women, while others mattered more for men. In terms of personal characteristics, the presence of children was definitely a factor for women, but not for men—except among those working full year and full time. Immigration status mattered for men but not for women, as immigrant men were significantly less likely than their Canadian-born counterparts to experience instability—by a margin of 5 to 10 percentage points. And although years of experience remained negatively associated with instability, it mattered little for men. For women, working in goods-producing industries had a negative association with employment instability.

As they are based on a smaller sample size, these results must be interpreted with caution. However, that some factors mattered more for women—particularly with respect to children and highly skilled occupations—suggests that men and women face a different set of circumstances, and may respond differently to incentives.

Table 6 Marginal effects from a probit model of employment instability, men and women

	All workers		Workers, employed full year		Workers, employed full year and full time	
	Men	Women	Men	Women	Men	Women
	marginal effect					
Presence of children						
Yes	-0.02	0.14*	0.02	0.10*	0.03	0.04
No	ref.	ref.	ref.	ref.	ref.	ref.
Age						
16 to 21	0.09	0.08	0.09	0.10	0.10	0.17
22 to 24	-0.02	0.06	0.00	0.04	0.01	0.09
25 to 27	-0.04	0.04	-0.01	0.03	0.00	0.07
28 to 29	ref.	ref.	ref.	ref.	ref.	ref.
Immigration status						
Immigrant	-0.10*	0.12	-0.06*	0.11	-0.05*	0.12
Canadian-born	ref.	ref.	ref.	ref.	ref.	ref.
Educational attainment						
High school or less	-0.01	0.05	-0.02	-0.02	0.01	-0.06
Postsecondary education	0.00	0.01	-0.01	-0.01	0.01	-0.01
University degree	ref.	ref.	ref.	ref.	ref.	ref.
Years of experience						
0 to 2 years	ref.	ref.	ref.	ref.	ref.	ref.
3 to 5 years	0.03	-0.07*	0.01	-0.04	0.01	-0.01
At least 6 years	-0.05	-0.10*	-0.05	-0.07	-0.04	-0.04*
Unknown	0.06	0.08	0.05	0.07	0.03	0.00
Firm size						
Less than 20 employees	0.07*	0.06	0.05	0.06	0.04	0.02
20 to 99	0.07	0.03	0.01	0.04	0.02	0.03
100 to 499	-0.03	0.00	-0.03	0.00	-0.01	0.01
At least 500	ref.	ref.	ref.	ref.	ref.	ref.
Size unknown	0.05	0.02	-0.02	-0.09	-0.01	-0.07

Table 6 Marginal effects from a probit model of employment instability, men and women (continued)

	All workers		Workers, employed full year		Workers, employed full year and full time	
	Men	Women	Men	Women	Men	Women
	marginal effect					
Occupation						
Management	-0.10	-0.19*	-0.07*	-0.16*	-0.05*	-0.11*
Business, finance and administration	-0.04	-0.12*	0.01	-0.11*	0.04	-0.07
Natural sciences	-0.11*	-0.16*	-0.05*	-0.17*	-0.03	-0.11*
Health	-0.04	-0.09	0.00	-0.06	0.02	-0.02
Social science, education, government service and religion	-0.07	-0.06	-0.01	-0.09	0.02	-0.03
Art, culture, recreation and sport	0.09	0.00	0.09	-0.08	0.15	-0.13*
Sales and service	ref.	ref.	ref.	ref.	ref.	ref.
Trades, transport, equipment operators	-0.04	-0.02	-0.03	0.02	0.00	0.07
Unique to primary and processing	-0.01	-0.03	-0.04	-0.03	-0.02	0.02
Occupation unknown	-0.11	0.07	-0.07*	0.08	-0.05	0.01
Industry						
Manufacturing	-0.07	-0.12*	-0.03	-0.12	-0.04	-0.05
Other goods producing	0.03	-0.06	0.03	-0.12*	0.01	-0.10*
Trades and Transportation	-0.06	-0.05	-0.03	-0.05	-0.05	-0.02
Professional services	-0.03	-0.04	-0.02	-0.04	-0.03	0.01
All other services	-0.03	-0.03	0.00	0.00	-0.03	0.04
Education, health and public administration	ref.	ref.	ref.	ref.	ref.	ref.
Industry unknown	-0.02	-0.11	0.03	-0.08	0.02	-0.09

* significantly different from the reference category (ref.) at the 5% level. Standard errors were obtained with bootstrap weights. Similar results were obtained when voluntary part-timers were excluded from the sample.

Note: The models also include year and regional dummies.

Source: Statistics Canada, Survey of Labour and Income Dynamics, 1998 to 2009.

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